

What is claimed is:

1. A freeze resistant buoy system comprising a tail-tube buoy having a thermally insulated section disposed predominantly above a waterline, said buoy further comprising a thermo-siphon disposed predominantly below said waterline.
2. A freeze resistant buoy system in accordance with claim 1 wherein said thermo-siphon comprises a porous heat-exchange material and a heat transfer fluid.
3. A freeze resistant buoy system in accordance with claim 2 wherein said porous heat-exchange material comprises graphite foam.
4. A freeze resistant buoy system in accordance with claim 1 further comprising stabilizing collar attached to the housing.
5. A freeze resistant buoy system in accordance with claim 4 wherein said stabilizing collar is located at least proximate to an interface between said lower section and said upper section.
6. A freeze resistant buoy system comprising: a tail-tube buoy having a thermally insulated section disposed predominantly above a waterline; a thermally conducting section disposed predominantly below said waterline; and a system housed within the buoy system for collecting and analyzing samples.
7. A freeze resistant buoy system in accordance with claim 6 wherein said system further comprises at least one device selected from the group consisting of mechanical, chemical, biological, electrical, electronic, sonic, and optical devices.
8. A freeze resistant buoy system in accordance with claim 6 wherein said system further comprises: a detector for detecting at least one toxic agent in a water sample; and introducing means for introducing a water sample into said detector and discharging said water sample from said detector.

9. A device in accordance with claim 8 wherein said detector further comprises a fluorometer for measuring photosynthetic activity of naturally occurring, indigenous photosynthetic organisms drawn into said detector system.
10. A device in accordance with claim 8 wherein said detector further comprises an electronics package that analyzes raw data from said detector and emits a signal indicating the presence of at least one toxic agent in said water.
11. A device in accordance with claim 8 that can wherein said device is configured as a component of an integrated data highway to which signal from said detector can provide the location and time of the introduction of at least one toxic agent in said water.